THE IDENTITY OF ADIANTUM AETHIOPICUM L.

By E. A. C. L. E. Schelpe.

An examination of the type material of *Adiantum aethiopicum* L. in the Linnean Herbarium has made it clear to the author that Sim (1917) misidentified this species in South Africa. This confusion probably resulted from the grouping of *A. aethiopicum* L. and *A. poiretii* Wikstr. in one species, as Hooker and Baker did in their Synopsis Filicum (1874). Kuhn (1869) and later Christensen (1932) in his "Pteridophyta of Madagascar", separated the two species correctly. Both these authors used the position of the vein endings in the sterile pinnules as the key character.

Linnaeus (1760), in the tenth edition of the Systema Naturae, described *A. aethiopicum* with "frondibus supradecompositis; pinnis integris rotundatis crenatulis pedicellis capillaribus." In the second edition of the Species Plantarum (1763), he altered this description slightly and added to it:" frondibus supradecompositis; pinnis integris rotundatis crenatis petiolatis capillaribus. Adiantum fruticosum aethiopicum pinnulis amplis subrotundatis superne dentatis media pinnarum parte petiolis insidentibus." Here, Linnaeus makes a reference to a plate (t.253, f.2) of a sterile frond in Plukenet's Almagestum (1696), which he refers to his *A. aethiopicum*. The detail in the drawing is insufficient to allow definite identification, but since the plant from which the figure was drawn was said to have been collected at the Cape, the plate possibly represents either *A. aethiopicum* or *Adiantopsis capensis* (Thbg.) Fee.

There are three specimens of *A. aethiopicum* in the Linnean Herbarium (1252/15, 1252/16, 1252/18). The first, regarded as the type specimen, which is annotated "Adiantum aethiopicum" by Linnaeus himself, comprises two fronds, mainly sterile, attached to a rhizome; the pinnule margins are serrate, with the veins ending in the apices of the serrations. The angle of the bases of the pinnules varies between 30° and 170°; the few fertile pinnules bear one or two sori. The second specimen is marked "CBS", an abbreviation for "Caput bonae spei". The third specimen, bearing fronds which are mainly fertile, is marked "Sp", probably indicating that it was collected by Sparrman. No specimens of *A. poiretii* were seen in the Linnean Herbarium.

A. aethiopicum is most easily distinguishable from *A. poiretii* by two characters; (i) the situation of the vein endings, and (ii) the serration of the sterile pinnules in the former. In *A. aethiopicum*, the margins of the sterile pinnules are fairly regularly serrate with all the veins ending in the apices of the serrations. (Fig. 1, a-c.) In *A. poiretii*, the margins of the sterile pinnules are irregularly crenate to a varying degree with the veins often ending in the sinuses between the crenations or slightly to one side of them (Fig. 1, f.)

The shape of the indusia and the number of sori per pinnule may also prove useful characters in the identification of many individuals of this group of species. In *A. aethiopicum* the mature indusia are orbicular to orbicular-reniform (Fig. 1,b), whereas in *A. poiretii* the mature indusia are widely reniform to lunate and occasionally almost straight (Fig. 1,d,e.) South African specimens of *A. aethiopicum* usually possess one or two sori per pinnule (occasionally three); most of the South African material of *A. poiretii* exhibits fertile pinnules bearing four to ten sori each. Occasionally, some of the pinnules on a frond may bear less, and at the other extreme, specimens of *A. poiretii* have been seen bearing up to fifteen sori per pinnule.

Although the shape of the pinnules and the angle of their bases have been used to differentiate between these two species, wide variation of these two characters may often be found in pinnules on the same frond. However, it may be noted that in *A. aethiopicum* the pinnules are usually cuneate with basal angles between 30° and 90°, and in *A. poiretii* rather more reniform with basal angle usually between 80° and 110°.

In *A. poiretii* the pinnules often become detached from the secondary rachises of the frond on drying, both in their natural habitat and on herbarium sheets. This phenomenon has not been observed to happen in *A. aethiopicum*.

A. cuneatum L. & F., a South American species which is common in cultivation and has apparently "escaped" about Durban, may be distinguished from *A. aethiopicum*, since the veins of *A. cuneatum* regularly end in sinuses between crenations on the margins of the sterile pinnules.

SYNONYMY

The synonymy of *A. aethiopicum* L. is as follows: *Adiantum aethiopicum* Linnaeus in Syst. Nat., ed. x, 2, 1329 (1759) et in Sp. Pl., ed ii, 1560 (1763); Hk. & Bkr., Syn. Fil., ed ii, 123 (in part) (1874); Christ, Farnk. d.Erde, 139 (in part) (1897); Engler & Prantl. Nat. Pfl., 1, 4, 286 (1902); Christensen, Ind. Fil., 23 (1906) et Dansk. Bot. Arkiv, 7, 122 (1932).

Adiantum assimile Swartz, Schrad. Journ., 1800^2, 2, 83 (1801).

Adiantum trigonum Labill., Nov. Holl. pl. spec., 2, 99, t.248, f.2 (1806).

"*Adiantum Poiretii* Wkstr." Sim, Ferns of S.Afr., ed ii, 247, t.137 (1917).

DISTRIBUTION

According to Christensen (1906), *A. aethiopicum* occurs in tropical and South Africa, Australia and New Zealand and *A. poiretii* in tropical and subtropical Africa, Mexico, tropical South America and east peninsular India. Specimens of *A. aethiopicum* from Australia, New Zealand and South Africa and specimens of *A. poiretii* from South Africa and east Central Africa, Madagascar, Tristan da Cunha, Mexico and South America have been seen by the author.

In South Africa, *A. aethiopicum* is apparently confined to the Cape South-western Region, whereas *A. poiretii* is widely distributed and frequent in the eastern Cape province, the Natal midlands and the eastern parts of the Transvaal but has been recorded from the Cape South-western Region.

A number of South African specimens of these two species in South African herbaria, the herbarium of the Royal Botanic Gardens, Kew, the herbarium of the British Museum of Natural History and the Fielding Herbarium at Oxford have been examined and are cited.

Adiantum aethiopicum L.

CAPE PROVINCE. Caledon: Elgin, *Compton* 13475 (Kb, P); Hottentots Holland, *Zeyher s.n.* (SAM). Cape Peninsula: Devils Peak, *Guthrie* 1323 (UC), *Pillans* 2701, *Wilms* 3917*a* (BM), *Wolley Dod* 547 (K), *Zeyher* 4638 (SAM); Kirstenbosch, *L. Bolus s.n.* (UC), *Compton s.n.* (UC), *Middlemost s.n.* (Kb), *Moss* 6259 (W), *Pearson s.n.* (P); Orange Kloof, *Gamble s.n.* (K); Rondebosch, *Levyns s.n.* (UC), *Pappe s.n.* (B), *Zeyher s.n.* (SAM); Roundhouse, *Wilms* 3917 (K); Simons Bay *Prior s.n.* (K); Simonstown, *Browning s.n.* (B); Table Mountain, *Burke s.n.* (B.M.), *Drege s.n.* (BM), *Ecklon s.n.* (K), *D'Urban s.n.* (F), *Harvey s.n.* (BM), *Prior s.n.* (K), *Rawson s.n.* (SAM, TM), *Zeyher s.n.* (B); Wynberg, *Wallich s.n.* (BM). Knysna: Plettenberg Bay, *Rex s.n.* (K). Paarl: Fransch Hoek, *Moss* 10356 (W). Riversdale: Riversdale, *Muir* 3409 (P). Stellenbosch: Jonkershoek, *Garside* 1669 (K), *Levyns s.n.* (UC). Swellendam: Tradouw Pass, *Barnard s.n.* (SAM). Wellington: Wellington, *Knobel s.n.* (TM). Worcester: Worcester, *Zeyher s.n.* (K).

Without locality: *Burchell* 274, 436, 5578 (K), *McCleland s.n.* (F), *Pappe s.n.* (K).

Adiantum poiretii Wikstr.

CAPE PROVINCE. Albert: Albert, *Cooper* 1790 (K). Bedford: Bedford, *Holland s.n.* (Kb); Kagaberg, *Galpin* 14 (P). Cape Peninsula: Kirstenbosch, *Compton s.n.* (UC); Orange Kloof, *Pillans* 3766 (B); Simons Bay, *MacGillivray* 382 (K); Slangulie, *Marloth* 1669 (P); Table

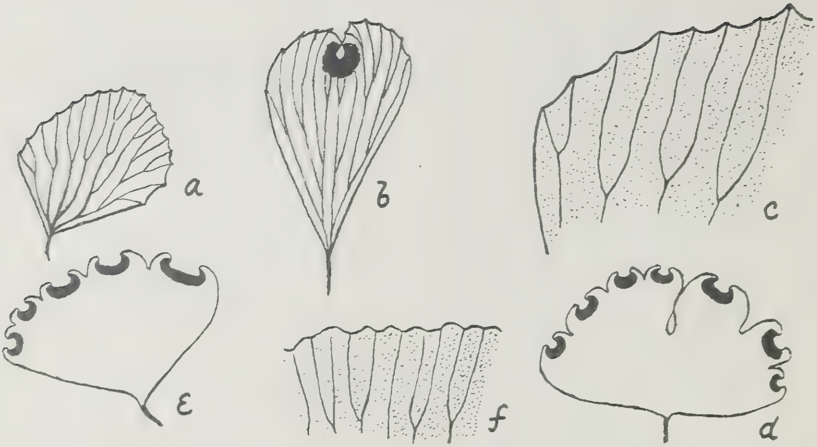

Fig. 1. *Adiantum aethiopicum* L. (*a*) Sterile pinnule (× 4) (*McCleland s.n.* (F)). (*b*) Fertile pinnule (× 4) (*McCleland s.n.* (F)). (*c*) Margin of sterile pinnule (× 8).
Adiantum poiretii Wikstr. (*d*), (*e*) Fertile pinnules (× 2) (D'Urban s.n. (F)). (*f*) Margin of sterile pinnule (× 8).

Mountain, *Blagrave s.n.* (K), *Harvey s.n.* (BM), *Milne* 279 (K), *Prior s.n.* (K). Engcobo: Engcobo, *Flanagan* 2780 (P), *McLoughlin* 88 (TM). Idutywa: Idutwya, *Pegler* 706 (P). Kingwilliamstown: Keiskamma Hoek, *Knight s.n.* (F); Perie, *Flanagan s.n.* (P), *T. R. Sim s.n.* (P). Mount Currie: Mount Currie, *Edwards* 41 (NU). Queenstown: Gwatyn, *Galpin* 8195 (P). Somerset East: Boschberg, *MacOwan* 1700 (BM, K, TM); Somerset East, *Bolus* 309 (B). Stockenstrom: Katberg, *Adams* 172 (NU). Umtata: Bazya, *Baur* 217 (K).

Without locality: *Burchell* 3120 (K).

NATAL. Bergville: Cathedral Peak Area, *Bursell* 85 (NU), *Esterhuysen* 12867 (B), *Schelpe* 389 (NU, PU); Natal National Park, *Bottomley s.n.* (P), *Doidge s.n.* (P), *Mogg* 4212 (P), *Schelpe* 1252 (NU). Dundee: Biggarsberg, *Wilms* 1763*a* (BM), *Sutherland s.n.* (K). Estcourt: Cathkin Peak Area, *Howlett* 33 (N, P), *Hillary* 96 (NU); Champagne Castle, *Bayer* 1448 (N, NU); Dalton Bridge, *Acocks* 11543 (N), *Wright, West & Acocks* 26 (B, N, P); Giants Castle, *Symons* 315 (TM); Mooi River, *Lindahl* 83 (NU). Himeville: Himeville, *Webb* 118 (NU). Impendhle: Impendhle, *Clarkson* 135 (N, NU). Klip River: Van Reenens Pass, *Schweickerdt s.n.* (TM). Lions River: Balgowan, *Fisher* 643 (NU); Karkloof, *Rycroft* 538 (NU); Lidgetton, *Mogg s.n.* (P);

Nottingham Road, *McClean* 902 (N). Polela: Bulwer, *Allsopp* 830 (NU), *Clarkson* 174 (N, NU), *Henkel s.n.* (NU); Donnybrook, *Doidge s.n.* (P); Highbury, *Doidge s.n.* (P). Umgeni: Baynes Drift, *Bursell* 105 (NU); Pietermaritzburg, *Graham* 78 (NU), Guthrie *s.n.* (P).

Locality unknown: Tweekloof, *Thode A*1200 (P). Without locality: *Bolton s.n.* (BM), *Gerard* 502 (BM, K).

BASUTOLAND. Leribe, *E. P. Phillips* 593 (K, SAM).

ORANGE FREE STATE. Zastron: Kadziberg, *Rehmann* 3966 (K). Without locality: *Cooper* 1052 (BM, K).

TRANSVAAL. Barberton: Barberton, *Williams s.n.* (TM); Nelspruit, *Bosman s.n.* (P). Belfast: Rietvlei, *Burtt Davy* 1235 (TM). Ermelo: Mavieriestad, *Pott* 4841 (B, TM). Letaba: Letaba River, *Junod* 2447 (TM); Magoebas Kloof, *Enslin & Schweickerdt s.n.* (NU, PU), *Gerstner* 5832 (P); Lydenburg: Lydenburg, *Atherstone s.n.* (K); Mariespkop, *Van Son s.n.* (TM). Pietersburg: Haenartsburg, *Eastwood s.n.* (P, TM); The Downs, *Junod* 4042 (P, TM). Pilgrims Rest: Graskop, *V. Wager* 174 (P); Pilgrims Rest, *V. Wager* 181 (P). Wakkerstroom: Volksrust, *Mogg s.n.* (P).

BECHUANALAND PROTECTORATE. Mochudi, *Harbor s.n.* (*Rogers* 66331) (W).

SOUTHERN RHODESIA. Essexvale, *Borle s.n.* (Kb). Ironmask Hill, *F. Eyles* 328 (B, BM, P) Mazoe, *Holland s.n.* (Kb). Melsetter, Lessops Pass, *Fisher* 1259 (NU). Salisbury, *Holland s.n.* (Kb).

B.	Bolus Herbarium, Capetown.
BM.	Herbarium, British Museum of Natural History, London.
F.	Fielding Herbarium, Oxford.
K.	Herbarium, Royal Botanic Gardens, Kew.
Kb.	National Botanic Gardens, Kirstenbosch.
N.	Natal Herbarium, Durban.
NU.	University of Natal (Botany Dept.), Pietermaritzburg.
P.	National Herbarium, Pretoria.
PU.	University of Pretoria, Pretoria.
SAM.	Herbarium, South African Museum, Capetown.
TM.	Herbarium, Transvaal Museum, Pretoria.
UC.	University of Capetown (Botany Dept.), Cape Town.
W.	University of the Witwatersrand (Botany Dept.), Johannesburg.

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SUMMARY

The identity of *Adiantum aethiopicum* L. in Southern Africa is established. Morphological characters, by which this species may be separated from similar species of Adiantum occurring in Southern Africa, are described and discussed. The known distribution of *A. aethiopicum* L. and *A. poiretii* Wikstr. in Southern Africa is given, and specimens examined by the author are cited.